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Safety

HANGAR DOOR OPERATION

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This instruction outlines responsibilities and procedures for safe operation of hangar doors. It implements the requirements outlined in AFOSHSTD 91-100, Aircraft Flightline Ground Operations and Activities. Compliance with this instruction is mandatory for all personnel assigned or attached to Hickam Air Force Base. This instruction applies to US Air Force Reserve and Hawaii Air National Guard units and personnel.

1. PURPOSE: The purpose of this AWI is to ensure the safety of all personnel during hangar door operations. It addresses hangar door hazards, emergency procedures, training requirements, and operation.

1.1. Hangars 2, 3, 4, 5, 7, 9, 11, 13, 15, 14, 34, and 35. Buildings 2020 and 2021 C-130, nose docks have manual horizontal sliding doors.

1.2. Hangar 35 has a manual "T-Tail" hangar door.

1.3. Building 3004, fuel cell and building 3400, HIANG F-15 hangars have electrical horizontal sliding doors.

2. HANGAR DOOR HAZARDS: Hangar door operation and movement creates a series of pinch points and crush points. If proper precautions are not adhered to, damage to equipment and injury or death to personnel can occur.

3. EMERGENCY PROCEDURES:

3.1. All units operating in or around hangars will develop shop-unique requirements or situation lesson plans for door operations. In the event of a mishap during hangar door operations, mishap notification procedures identified will be followed. All units operating in or around hangars will develop a hanger door lesson plan that specifies hangar door emergency procedures.

4. TRAINING REQUIREMENTS:

4.1. Manual doors:

4.1.1. All maintenance personnel assigned or attached to Hickam AFB that work in hangers are required to become qualified on manual hangar door operations.

4.1.2. Each unit is required to establish a training plan for there respective hangers.

4.1.3. Manual door training should consist of instruction using the hangar door lesson plan, On-The-Job Training (OJT), and a hands-on practical observation. Only personnel qualified to operate hangar doors are authorized to perform trainer duties.

4.1.4. Document qualification in CAMS course code titled "Manual Hanger Doors", and AF Form 55, Employee Safety and Health Record.

4.2. Manual "T-Tail" hangar door:

4.2.1. To be selected for manual "T-Tail" hangar door training, Hickam personnel must have aircraft maintenance AFSC.

4.2.2. Manual "T-Tail" hangar door training consists of instruction using the hangar door lesson plan, OJT, and a hands-on practical observation. Only personnel qualified to operate hangar 35 manual "T-Tail" hangar doors are authorized to perform trainer duties.

4.2.3. Document qualification in CAMS course code titled "T-Tail hanger Doors", and AF Form 55, Employee Safety and Health Record.

4.3. Electrical doors:

4.3.1. Personnel selected to receive training on electrical door operation will be kept to a minimum.

4.3.2. Electrical door training consists of instruction using the hangar door lesson plan, and OJT using 15 AMXS/MXFF Memorandum, Electric Door Operating Instructions (fuel cell) and 154th MXS/LGMC15 Memorandum, Electric Door Operation Instructions for Hanger 3400 (HIANG). 15 AMXS/MXF personnel will provide OJT for Building 3004 and 154th MXS/LGMC15 will provide OJT for Build 3400.

4.3.3. Document qualification on CAMS course code titled "Electric Hanger Doors" for Building 3004 (fuel cell) and Building 3400 (HIANG) also document in AF Form 55, Employee Safety and Health Record. In addition, only personnel authorized by letter, signed by the 15 AMXS Commander or designated representative, are authorized to operate hangar doors in building 3004, fuel cell.

4.4. Non maintenance personnel assigned to Hickam AFB will receive hangar door awareness training. Awareness training is included in the hangar door lesson plan. Document hangar door awareness training on the individual's AF Form 55, Employee Safety and Health Record.

5. HANGER DOOR OPERATIONS:

5.1. Manual hanger doors:

5.1.1. Personnel must comply with all safety precautions prior to door movement. Failure to comply may result in damage to equipment, and/or injury to personnel.

5.1.1.1. Notify all individuals working on or around hangar doors prior to door operation. Ensure personnel are clear of hangar doors during entire opening/closing procedure.

5.1.1.2. Verify hangar door tracks are free of obstructions, and foreign objects, that could prevent proper door operation, and/or cause damage.

5.1.1.3. Doors will be maintained in either the fully closed, no gaps between door panels, or open to a minimum 10 ft. clearance between center door panels doors.

5.1.2. Prior to door movement ensure foot lock (1 per door) and vertical-bar locks (1 per center door) are released.

5.1.3. When pushing door to required position, only one door panel will be positioned at a time. Use sufficient personnel to allow door panel to be moved without causing strain or injury of personnel.

5.1.3.1. DO NOT use motor vehicles to open or close door panels – only use manual procedures – physically push door panels open or close.

5.1.4. Once door panel is in place, if applicable, set the foot lock and or vertical-bar lock to prevent inadvertent door panel movement.

5.2. Manual “T-Tail” hangar door:

WARNING: Prior to Hanger 35 doors being opened or closed, contact 15 AMXS MOC at 448-6910 if doors require opening after normal duty hours.

NOTE: Hangar 35 “T-Tail” hangar door only applies to aircraft bay 2.

5.2.1. Personnel must comply with all safety precautions prior to door movement. Failure to comply may result in damage to equipment, and/or injury to personnel. Notify all individuals working on or around hangar doors prior to door operation. Ensure personnel are clear of hangar doors during entire opening/closing procedure.

5.2.2. Position calavar (lift) to access “T-Tail” hangar door operating mechanism.

WARNING: Failure to insert steel bars (with streamers) in horizontal sliding hangar door tracks could allow inadvertent horizontal door closure while “T-Tail” hangar door is in the open position. Closing the horizontal sliding hangar doors with “T-Tail” hangar door in open position will cause the horizontal sliding hangar door to fall off of its track and slam to the ground. This may result in damage to equipment, and/or severe injury/death to personnel.

5.2.3. Prior to operating “T-Tail” hangar door ensure horizontal sliding doors are open and steel locking bars (with streamers) are installed in horizontal sliding hangar door tracks.

5.3. Electrical doors:

5.3.1. Personnel must comply with all safety precautions prior to door movement. Failure to comply may result in damage to equipment, and or injury to personnel. Notify all individuals working on or around hangar doors prior to door operation. Ensure personnel are clear of hangar doors during entire opening and closing procedure.

5.3.2. Operate hangar doors at building 3004 (fuel cell) IAW 15 AMXS/MXFF Memorandum, *Electric Door Operating Instructions*, and at building 3400 (HIANG) IAW 154 MXS/MXMC15 Memorandum, *Electric Door Operation Instructions for Hanger 3400*.

5.3.3. Electrical door switch operating procedures are posted next to the operating controls inside the hanger at building 3004 and 3400.

6. REFERENCES

- 6.1. Technical Order (TO) 00-20-1, Aerospace Equipment Maintenance Inspection, Documentation, Policy and Procedures.
- 6.2. AFI 21-101, Maintenance Management of Aircraft.
- 6.3. Air Force Occupational, Safety and Health Standards (AFOSH) 91-66, General Industrial Operations.
- 6.4. Air Force Occupational, Safety and Health Standards (AFOSH) 91-100, Aircraft Flight Line Ground Operations and Activities.

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Attachment 1

HANGAR DOOR LESSON PLAN

Table A1.1. Hangar Door Lesson Plan

<p>1. Hanger Door Hazards:</p> <p>1.1. Pinch Points:</p> <p>1.1.1. Definition: Points where adjacent surfaces come together and create an area with potential to pinch, rip, break, and/or otherwise damage equipment and/or personnel.</p> <p>1.1.2. Risk Potential: Equipment and/or personnel caught in a pinch point will be damaged. Due to the extreme size and weight of hanger doors, pinch points have the potential to break limbs, tear off fingers or toes, rip open skin, and severely damage equipment. Do not underestimate the hazard.</p> <p>1.1.3. Safety Precautions: Notify all personnel and ensure all equipment is clear prior to door movement. Visually ensure personnel and equipment is clear prior to door movement. Utilize situational awareness at all times.</p> <p>1.2. Crush Points:</p> <p>1.2.1. Definition: Points where adjacent surfaces come together and create an area with potential to crush, pulverize, and/or otherwise squash equipment and/or personnel.</p> <p>1.2.2. Risk Potential: Equipment caught in a crush point will be severely damaged. Personnel caught in a crush point will be seriously injured and/or killed.</p> <p>1.2.3. Safety Precautions: Notify all personnel in the area prior to door movement. Visually ensure personnel and equipment are clear prior to door movement. Utilize situational awareness at all times.</p> <p>1.3. Additional Considerations:</p> <p>1.3.1. Manual Hangar Doors:</p> <p>1.3.1.1. Manual hangar doors are divided into five sections for each door opening. This increases the number and severity of pinch points along the entire length of the door opening.</p> <p>1.3.1.2. Each door panel weighs in excess of 10K lbs. When moving these doors, be sure to use enough personnel to prevent muscle strain. Remember to use your legs to push and not your arms/back. Also, since these doors are rolling, they will not stop for equipment or personnel.</p> <p>1.3.2. Manual "T-Tail" Hangar Door (Hangar 35):</p> <p>1.3.2.1. "T-Tail" hangar door pivots along its track creating pinch points along either side of its length.</p> <p>1.3.3. Electrical Hangar Door:</p> <p>1.3.3.1. Unlike manual doors that take a few feet to gain momentum, electrically actuated doors have instant momentum. They move much more quickly than manual doors. Be aware and listen for the door operation alarm.</p> <p>1.4. Specific Hazards:</p> <p>1.4.1. Hangars 2, 3, 4, 5, 7, 9, 11, 13, 15, 14 and 34:</p> <p>1.4.1.1. Utilizes manual doors that when opened to the fully recessed position creates crush hazards.</p>
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1.4.1.2. Office structures, CTK storage cages, wooden frames, fences, equipment and mechanical stops are welded to the doors increases pinch/crush points hazard by minimizing free space for personnel to move while operating doors while inside or out side of these hangers. Pinch/crush hazards change daily on these hangers making opening and closing these hanger door extremely important one checks all ten doors front and backs sides before attempt to move.

1.4.1.3. Center door come together flush creating a crush point at the door center position.

1.4.1.4. Door consists of ten adjacent panels that separate and come together during door operation. This creates pinch/crush points the entire length of the door.

1.4.2. Building 2020 and 2021:

1.4.2.1. Utilizes manual doors that when opened to the fully recessed position creates crush hazards.

1.4.2.2. Center door stops leaving a Ten foot gap at the door center position.

1.4.2.3. Door consists of ten adjacent panels that separate and come together during door operation. This creates pinch/crush points the entire length of the door.

1.4.3. Hangar 35:

1.4.3.1. Employs manual doors. Be aware to stay clear of doors and recess areas when doors are being operated.

1.4.3.2. As the "T-Tail" hangar door slides along its track. It separates and comes back together with the hangar structure. This creates pinch points the entire length of both sides the door.

1.4.3.3. "T-Tail" hangar door is operated using a pulley type chain mechanism. This chain could catch hands or fingers and cause injury. Use leather gloves when operating this door.

1.4.3.4. Horizontal sliding hangar doors will fall off their tracks and slam to the ground if closed when "T-Tail" hangar door is in the open position. Ensure horizontal sliding doors are open, and locking bars are inserted in horizontal sliding door tracks to prevent inadvertent closure of the horizontal sliding hangar doors. Failure to do so could cause damage to equipment, and/or injury/death of personnel.

1.4.4. Electric hanger doors:

1.4.4.1. Employs electrical doors that open to the fully recessed position creating crush hazards in both door recesses.

1.4.4.2. Center door come together flush creating a crush point at the door center position.

1.4.4.3. Door panels slide along adjacent panels during door operation creating pinch points the entire length of the door.

1.4.4.4. For building 3004 (fuel cell) contact Fuel Systems Supervisor at 449-1233, for building 3400 (HIANG) contact F-15 Accessories at 448-7221 for additional training/information.

2. Emergency Procedures:

2.1. Mishap Reporting: Report all mishaps IAW procedures in 15 AWI.

2.1.1. Seek immediate medical attention for anyone injured during hangar door operation.

2.1.2. If equipment is damaged during hangar door operation, do not attempt to dislodge equipment or move hanger door until cleared to do so by base Civil Engineering or Base Safety.

2.2. Door Malfunction: Report any door malfunctions to the appropriate facility manager. Do not attempt to repair hanger doors yourself. Facility manager will call in work order to base CE customer service.

2.3. If electrical power is lost during operation of electrical doors contact for building 3004 (fuel cell) Fuel Systems Supervisor at 449-1233 and for building 3400 (HIANG) contact F-15 Accessories supervisor at 448-7456 before opening manually.

3. Hangar Door Operation:

3.1. Manual Hangar Doors

3.1.1. Notify all personnel in vicinity that hanger door operation is imminent.

3.1.2. Verify hangar door tracks are free from debris/obstruction.

3.1.3. Verify personnel and equipment are clear from hangar doors.

3.1.4. Release footlock (1 per door), and vertical-bar lock (center door only).

3.1.5. Position door panel using sufficient number of personnel to prevent injury.

3.1.6. Set foot lock after opening to position, a 10-foot opening between adjacent door panels must be provided to prevent injury of personnel.

3.2. Manual "T-Tail" hangar door (Hangar 35):

WARNING: Failure to insert steel bars (with streamers) in horizontal sliding hangar door tracks could allow inadvertent horizontal door closure while "T-Tail" hangar door is in the open position. Closing the horizontal sliding hangar doors with "T-Tail" hangar door in open position will cause the horizontal sliding hangar door to fall off of its track and slam to the ground. This may result in damage to equipment, and/or sever injury/death to personnel.

NOTE: "T-Tail" hangar door applies to aircraft bay 2.

3.2.1. Notify all personnel in vicinity that hanger door operation is imminent.

3.2.2. Verify hangar door tracks are free from debris/obstruction.

3.2.3. Verify personnel and equipment are clear from hangar doors.

3.2.4. Position cantilever to access door control mechanism.

Ensure horizontal sliding hangar doors are open and locking bar devices (with streamers) are installed in horizontal sliding hangar door tracks.

3.2.6. Position "T-Tail" hangar door to full open or full closed position.

3.3. Electrical Hangar Doors (Building 3004 and 3400):

3.3.1. Notify all personnel in vicinity that hangar door operation is imminent.

3.3.2. Operate hangar doors at building 3004 (fuel cell) IAW 15 AMXS/MXFF Memorandum, *Electric Door Operating Instructions*, and at building 3400 (HIANG) IAW 154 MXS/MXMC15 Memorandum, *Electric Door Operation Instructions for Hanger 3400*.

4. Hangar Door Awareness Training:

4.1. All personnel who enter a hanger through hangar door openings are subject to the hazards identified in Section A. Ensure personnel understand these hazards.

4.2. If hangar doors are in operation, do not attempt to pass through them. DO NOT enter/exit through hangar door while they are being operated.

Attachment 2

HANGAR DOOR OPERATION CHECKLIST

Table A2.1. Hangar Door Operations Checklist

<p>1. Manual Hangar Door:</p> <p>1.1. Notify all personnel in vicinity that hangar door operation is imminent.</p> <p>1.2. Verify hangar door tracks are free from debris/obstruction.</p> <p>1.3. Verify personnel and equipment are clear of hangar doors.</p> <p>1.4. Release foot lock (1 per door), and vertical-bar lock (center door only).</p> <p>1.5. Position door panel using sufficient number of personnel to prevent injury.</p> <p>1.6. Set foot lock, and vertical-bar lock, if applicable.</p> <p>NOTE: If doors are in the open position, a 10-foot opening between adjacent door panels must be provided to prevent injury of personnel.</p> <p>2. Manual “T-Tail” Hangar Door (Hangar 35):</p> <p>WARNING: Failure to insert bars (with streamers) in horizontal sliding hangar door tracks could allow inadvertent horizontal door closure while “T-Tail” hangar door is in open position. Closing the horizontal sliding door with “T-Tail” hangar door in open position will cause the horizontal sliding hangar door to fall off of its track and slam to the ground. This may result in damage to equipment, and/or severe injury/death to personnel.</p> <p>NOTE: “T-Tail” hangar door only applies to aircraft bay 2.</p> <p>2.1. Notify all personnel in vicinity that hangar door operation is imminent.</p> <p>2.2. Verify personnel and equipment are clear of hangar doors.</p> <p>2.3. Position cantilever (lift) to access door control mechanism.</p> <p>2.4. Ensure horizontal sliding hangar doors are open and locking bar devices (with streamers) are installed in horizontal sliding door tracks.</p> <p>2.5. Position “T-Tail” hangar door to full open operation, or full closed position.</p> <p>3. Electrical Hangar Door (Building 3004 and 3400):</p> <p>3.1. Notify all personnel in vicinity that hangar door operation is imminent.</p> <p>3.2. Operate hangar doors at building 3004 (fuel cell) IAW 15 AMXS/MXFF Memorandum, <i>Electric Door Operating Instructions</i>, and at building 3400 (HIANG) IAW 154 MXS/MXMC15 Memorandum, <i>Electric Door Operation Instructions for Hanger 3400</i>.</p>

Attachment 3**ELECTRONIC DOOR OPERATING INSTRUCTIONS MEMORANDUM**

2 Feb 2004

MEMORANDUM FOR ALL PERSONNEL

FROM: 15 AMXS/MXFF

SUBJECT: Electric Door Operating Instructions

1. REFERENCE: AFOSH Std. 91-100, para 7-2.
2. Only qualified personnel approved by the Fuels Systems Superintendent are authorized to operate these doors (see authorization letter). Operators will be thoroughly familiar with these operating instructions and all precautions necessary for safe operation of these doors.
3. Operating instructions are as follows:
 - a. Ensure fire doors are closed and latched. The hangar doors will not operate when the fire doors are open.
 - b. Ensure the door tracks are clear of all foreign objects, equipment and personnel, check inside and outside.
 - c. Ensure personnel and aircraft are clear of entire door area and there are no personnel in the hangar door wells prior to placing the doors in motion.
 - d. Place power handle to "ON" position.
 - e. Depress and hold switch, which corresponds with the directional arrow on the control box.
 - f. The Klaxon alarm will sound approximately nine seconds prior to door movement and will sound continuously during door operation.
 - g. The door operator will operate the door throughout the entire operation. The use of plugs or any other device used to keep the switch depressed is not authorized.
 - h. In case of electrical failure, the doors can be operated manually by opening the manual clutch access panel, pushing in the manual clutch, and installing a locking bolt in the manual clutch.
 - i. Doors will be opened to permit a minimum of ten feet of clearance at each wing tip (see markings on floor). Under no circumstances will the hangar doors be opened to a width of less than ten feet.
 - j. Place power handle to the "OFF" position after operation is complete.

ROGER H. HORIUCHI, WS-10
Fuel Systems Supervisor

Attachment 4**HAWAII AIR NATIONAL GUARD
HEADQUARTERS 154TH WING**

19 February 2004

MEMORANDUM FOR ALL PERSONNEL

FROM: 154 MXS/MXMC15

SUBJECT: Electric Door Operation Instructions for Hanger 3400

1. REF: AFOSH STD 91-100, Para 7.2.3

2. Only qualified personnel trained in Electric Hanger Door Operation (Course code titled "Electric Hanger Doors") are authorized to operate the hanger doors in Bldg 3400. Operators will be thoroughly familiar with the following operation procedures.

3. General:

- a. Hanger doors are a serious accident potential when operated in an unsafe manner and should be operated only by authorized personnel.
- b. Each door section is equipped with a buzzer warning device. The buzzer sounds as soon as the "open" or "close" button is depressed and stays on as long as the door is moving.
- c. There are two sets of switches for each door section, one inside and one outside. The outside switch is covered with a metal plate for security reasons.
- d. Each door section has a small exit door equipped with a safety switch. If the exit door is open. The large electric door will not operate.

4. Hanger Door Operation:

- a. Insure the small exit door is completely closed.
- b. Insure all personnel and equipment are clear of doors.
- c. Depress selected button and hold until door is at the desired position (minimum 10 feet open IAW AFOSH 91-66). The warning buzzer should sound for approximately five seconds before the door starts to move.
- d. Insure prior to and during door movement that there are no obstructions to the sliding sections.
- e. Do not ride the door while it is moving.
- f. Doors will be open to permit a minimum of 10 feet clearance at each wing tip.
- g. Any malfunctions with the doors and/or warning system will be reported to the building manager and the dock chief. Electrical box 11 will not be opened to bypass the switches in the event of switch malfunctions.
- h. Only authorized personnel will operate the doors.

CRAIG M. HARIMOTO, SMS, HIANG
Supervisor, F-15 Accessories